



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES SCIENCE CENTER
8901 La Jolla Shores Drive
LA JOLLA, CA 92037-1508

March 17, 2015

F/SWC1:AEH

CRUISE ANNOUNCEMENT

VESSEL: R/V *New Horizon* (SIO) Cruise 1504-NH.

CRUISE DATES: April 2 - 18, 2015.

PROJECT: CalCOFI Survey, Fisheries Resources Division.

ITINERARY: Depart San Diego, California at 0800 on April 2, 2015. Proceed to first CalCOFI station 93.3/26.7 (position 32° 57.4'N/117° 18.3'W) and begin a standard CalCOFI pattern (see attached cruise track and station position table). The vessel will return to San Diego, California on April 18, 2015.

OBJECTIVES:

1. To continue an ongoing assessment of pelagic fish stocks between Morro Bay and La Jolla, California.
2. To monitor environmental conditions within the CalCOFI survey area.
3. To conduct continuous underway sampling of surface waters. Temperature, salinity and chlorophyll will be automatically logged by computer with the output from the GPS navigational unit.
4. To record current profiles throughout the duration of the cruise with the Acoustic Doppler Current Profiler.
5. To measure optical profiles within the California bight. The optical profile measurements will include pigment concentration and particle absorption.
6. To record continuous acoustic targets obtained with the Simrad EK-60 scientific sounder.

PROCEDURES: 1. Each standard CalCOFI station will include the following:

- a. A CTD/Rosette consisting of 24 10-liter hydrographic bottles will be lowered to 500 meters (depth permitting) to measure physical parameters and collect water at discrete depths for analysis of: oxygen concentration, salinity, nutrients, chlorophylls and phytoplankton.
- b. A CalBOBL (CalCOFI Bongo) standard oblique plankton tow with 300 meters of wire out, depth permitting, using paired 505 µm mesh nets with 71 cm diameter openings. The technical requirements for this tow are: Descent rate of 50 meters per minute, ascent rate of 20 meters per minute. All tows with ascending wire angles lower than 38° or higher than 51° in the final 100 meters of wire will be repeated. Additionally, a 45° wire angle should be closely



maintained during the ascent and descent of the net frame. A self-contained LOPC(Laser Optical Particle Counter)will be mounted in the port side opening during each tow. The port side sample will be preserved in buffered ethanol at all stations inshore of, and including station 100.0.

c. A Manta net (surface) tow, using a 505 μm mesh net on a frame with a mouth area of 0.1333 m^2 .

d. Weather observations.

e. A Pairovet (vertical) plankton tow will be taken at all stations inshore of, and including station 70. The Pairovet net will be fished from 70 meters to the surface (depth permitting) using paired 25 cm diameter 150 μm mesh nets. The technical requirements for Pairovet tows are: Descent rate of 70 meters per minute, ascent rate of 70 meters per minute. All tows with wire angles exceeding 15° during the ascent will be repeated.

f. A PRPOOS(Planktonic Rate Processes in Oligotrophic Ocean Systems) net tow will be taken at all stations on line 90.0 and 80.0 as well as stations out to and including station 70.0 on lines 86.7 and 83.3. These stations are occupied as part of the LTER(Long Term Ecological Reserve) project. The mesh of the PRPOOS net is 202 μm and the tow is a vertical cast up from 210 meters.

g. At about 1100 hours on each day of the cruise a primary productivity CTD cast consisting of six 10-liter hydrographic bottles will be carried out. The cast arrangement will be determined by a Secchi disc observation. The purpose of the cast is to collect water from 6 discrete depths for daily *in situ* productivity experiments. Measurements of extracted chlorophyll and phaeophytin will be obtained with a fluorometer. Primary production to be measured as C^{14} uptake in a 6 hour *in situ* incubation. Nutrients will be measured with an auto-analyzer. All radioisotope work areas will be given a wipe test before the departure of the SIO technical staff.

h. A light meter(secchi) will be used to measure the light intensity in the euphotic zone at every daylight station including the primary productivity cast.

i. During transit between stations, a bird observer and three mammal observers will be recording location and species of various sea birds and marine mammals.

j. During transit between most daylight stations, an acoustic hydrophone array will be towed off the stern with a cable/winch to record sounds from marine mammals. Upon approaching a station, two sonobuoys will be deployed one nautical mile prior to stopping for station work.

k. During the grid occupation, the CUFES pump will run continuously between stations to sample pelagic fish eggs. The CUFES pump/pipe will be hull mounted to draw water from a depth of three meters into a scientific laboratory van on the main deck, port side.

EQUIPMENT:

1. Supplied by scientific party:
 - 37% Formalin (SWFSC)
 - 95% Ethyl alcohol (SWFSC)
 - Sodium borate (SWFSC)
 - 30 cc and 50 cc syringes (SWFSC)
 - Tris buffer (SWFSC)
 - Canulas (SWFSC)
 - Pint, quart and gallon jars (SWFSC)
 - Inside and outside labels (SWFSC)
 - CalCOFI net tow data sheets (SWFSC)
 - 71 cm CalCOFI Bongo frames (SWFSC)
 - 71 cm CalCOFI 505 μ m mesh Bongo nets (SWFSC)
 - CalCOFI 150 μ m calvet nets and codends (SWFSC)
 - CalCOFI pairovets frames (SWFSC)
 - 333 μ m mesh codends (SWFSC)
 - LTER PRPOOS frames (LTER)
 - LTER 202 μ m mesh nets and codends (LTER)
 - Inclinometer for bongo tows (SWFSC)
 - Digital flowmeters (SWFSC)
 - 75 lb Bongo weights (SWFSC)
 - 170 lb hydro weight (LTER)
 - CalCOFI Manta net frames (SWFSC)
 - 60 cm CalCOFI 505 μ m mesh Manta nets (SWFSC)
 - Standard CalCOFI tool boxes (SWFSC)
 - Bucket thermometers and holders (SIO)
 - Hand held inclinometer (SWFSC)
 - Oxygen titration rig with reagents (SIO)
 - Oxygen flasks (SIO)
 - Guildline Portasal (SIO)
 - Salinity bottles (SIO)
 - Standard sea water (SIO)
 - Data sheets for scheduled hydrographic work (SIO)
 - Weather observation sheets (SIO)
 - CTD and rosette (SIO)
 - 10 liter hydrographic bottles (SIO)
 - Isotope van (SIO)
 - LTER van (LTER-UNOLS)
 - CUFES van (SWFSC)
 - Hydrophone deck winch (SIO)
2. Supplied by R/V *New Horizon*:
 - Hydro winch with $\frac{1}{4}$ " cable for standard Bongo, Pairovets and Manta tows
 - Oceanographic winch w/.322" conductive cable
 - J-frame w/blocks to accommodate .322" conductive cable and $\frac{1}{4}$ " mechanical cable
 - Constant temperature in main lab set at 22°C \pm 1°C (71.5°F \pm 2°F)
 - Winch monitoring system
 - 12 kHz Knudsen precision depth recorder
 - Acoustic Doppler Current Profiler

MISCELLANEOUS:

1. At the completion of the cruise an inspection will be made of scientific working and berthing spaces by the Master or his designated representative. The scientific party is responsible for the condition and cleanliness of spaces assigned to the scientific party.
2. The Cruise Leader will hold a pre-cruise meeting aboard the vessel before departure.

3. All dates and times recorded will be in Pacific Standard Time.

SWFSC PERSONNEL:

Amy Hays SWFSC
Susan Manion SWFSC

NMFS personnel authorized per diem at the rate of \$5.00 per day to be paid via travel voucher at the termination of the cruise.

WATCH HOURS: 0000-1159.....OVERTIME:.....108 hours
1200-2359.....NIGHT DIFF:.....108 hours

25 Feb 2015
Date: _____

Prepared by:  _____
Amy E. Hays

Approved by: _____

Francisco Werner, Ph.D.
Science & Research Director
Southwest Fisheries Science Center

Proposed station order and positions:

Schedule Order	Line	Station	Lat Deg	Lat Dec Min	Lon Deg	Lon Dec Min
1	93.3	26.7	32	57.378	117	18.318
2	93.4	26.4	32	56.94	117	16.41
3	91.7	26.4	33	14.61	117	27.924
4	93.3	28	32	54.78	117	23.658
5	93.3	30	32	50.778	117	31.872
6	93.3	35	32	40.782	117	52.368
7	93.3	40	32	30.78	118	12.828
8	93.3	45	32	20.778	118	33.252
9	93.3	50	32	10.782	118	53.634
10	93.3	55	32	0.78	119	13.98
11	93.3	60	31	50.778	119	34.29
12	93.3	70	31	30.78	120	14.796
13	93.3	80	31	10.782	120	55.158
14	93.3	90	30	50.778	121	35.376
15	93.3	100	30	30.78	122	15.45
16	93.3	110	30	10.782	122	55.392
17	93.3	120	29	50.778	123	35.196
18	90	120	30	25.074	123	59.934
19	90	110	30	45.072	123	19.896
20	90	100	31	5.076	122	39.72
21	90	90	31	25.074	121	59.4
22	90	80	31	45.072	121	18.93
23	90	70	32	5.076	120	38.322
24	90	60	32	25.074	119	57.558
25	90	53	32	39.072	119	28.932
26	90	45	32	55.074	118	56.13
27	90	37	33	11.076	118	23.22
28	90	35	33	15.072	118	14.982
29	90	30	33	25.074	117	54.348
30	90	28	33	29.076	117	46.08
31	90	27.7	33	29.676	117	44.844
32	88.5	30.1	33	40.464	118	5.016
33	86.8	32.5	33	53.328	118	26.652
34	86.7	33	33	53.37	118	29.418
35	85.4	35.8	34	1.278	118	50.046
36	86.7	35	33	49.368	118	37.722
37	86.7	40	33	39.366	118	58.452
38	86.7	45	33	29.37	119	19.14
39	86.7	50	33	19.368	119	39.792
40	86.7	55	33	9.366	120	0.402
41	86.7	60	32	59.37	120	20.976
42	86.7	70	32	39.366	121	1.998

43	86.7	80	32	19.368	121	42.87
44	86.7	90	31	59.37	122	23.592
45	86.7	100	31	39.366	123	4.164
46	86.7	110	31	19.368	123	44.586
47	83.3	110	31	54.702	124	10.218
48	83.3	100	32	14.7	123	29.538
49	83.3	90	32	34.704	122	48.702
50	83.3	80	32	54.702	122	7.71
51	83.3	70	33	14.7	121	26.568
52	83.3	60	33	34.704	120	45.264
53	83.3	55	33	44.7	120	24.552
54	83.3	51	33	52.704	120	7.95
55	83.3	42	34	10.704	119	30.51
56	83.3	40.6	34	13.5	119	24.672
57	83.3	39.4	34	15.9	119	19.668
58	81.7	43.5	34	24.33	119	48.018
59	81.8	46.9	34	16.488	120	1.512
60	80	50.5	34	27.996	120	29.34
61	80	51	34	27	120	31.434
62	80	55	34	18.996	120	48.144
63	80	60	34	9	121	9
64	80	70	33	48.996	121	50.58
65	80	80	33	28.998	122	31.998
66	80	90	33	9	123	13.254
67	80	100	32	48.996	123	54.354
68	76.7	100	33	23.292	124	19.368
69	76.7	90	33	43.29	123	37.998
70	76.7	80	34	3.294	122	56.46
71	76.7	70	34	23.292	122	14.76
72	76.7	60	34	43.29	121	32.892
73	76.7	55	34	53.292	121	11.898
74	76.7	51	35	1.29	120	55.068
75	76.7	49	35	5.292	120	46.644

